UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,428	10/08/2003	Louis Racette	16246-1US JA/AD/mb	4193

20988 7590 06/11/2007

OGILVY RENAULT LLP
1981 MCGILL COLLEGE AVENUE
SUITE 1600
MONTREAL, QC H3A2Y3
CANADA

EXAMINER	
CHANG, AUDREY Y	

ART UNIT	PAPER NUMBER
2872	

MAIL DATE	DELIVERY MODE
06/11/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/680,428	**Applicant(s)** RACETTE ET AL.	
	Examiner Audrey Y. Chang	**Art Unit** 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *38-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38-47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on **March 27, 2007** has been entered.

2. This Office Action is also in response to applicant's amendment filed on **March 27, 2007**, which has been entered into the file.

3. By this amendment, the applicant has canceled claims 1-37 and had amended claims 38 and 43.

4. Claims 38-47 remain pending in this application.

5. The rejections of claims 38-47 under 35 USC 112, first paragraph, with regard to newly added matters set forth in the previous Office Action are withdrawn in response to applicant's amendment.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. **Claims 38-47 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 38 and 43 have been amended to include the phrase "depth field (D)", however the specification **fails** to give the specific and adequate teachings as to what distance (D) is referred here to be the *depth field.*

Claims 38 and 43 have been amended to include the phrase $w \equiv 1/D \equiv L$, wherein w stands for width of the aperture and L stands for luminosity. **Claims 38 and 43 have also been amended** to include the phrase include the phrase $l \equiv 1/D \equiv L$, wherein l stands for length of the aperture and L stands for luminosity. The specification and the claims however fails to teach how could the luminosity be identical to length or inverse of a length. The definition of luminosity is the amount of energy of a body radiates per unit of time and in SI unit it is measured of watts, (energy per unit time). By dimension analysis, luminosity has a dimension of $(M*L^2/T^3)$ wherein M stands for mass, L stands for length and T stands for time. It is therefore impossible for the luminosity to be identical to quantities with either dimension of length (L) or dimension of inverse length (1/L).

By dimensional analysis these equations requires L = inverse L = $(M*L^2/T^3)$, that is totally impossible. **These equations therefore are wrong.** The specification fails to give adequate teachings as to how could these equations be ever deduced.

Claims 38 and 43 have been amended to include the phrase $g \equiv 1/L \equiv H \equiv 1/R$, wherein g stands for horizontal **distance** between apertures, H stands for horizontal viewing **angle**, and R stands for image definition. Similarly by the dimension analysis, this equation requires L = inverse L = angle = inverse angle, which is totally impossible.

Claims 38 and 43 have been amended to include the phrase $d \equiv V \equiv 1/L$, wherein d stands for vertical gap between rows of apertures, and V stands for vertical viewing **angle**. By the dimensional analysis this equation requires L = angle = inverse $(M*L^2/T^3)$, which is totally impossible.

Claims 38 and 43 have also been amended to include the phrase $t \equiv D \equiv 1/H \equiv 1/V$, wherein t stands for thickness of the substrate, H stands for horizontal viewing **angle**, and V stands for vertical viewing angle. By dimensional analysis, this equation requires L = L = inverse angle = inverse angle which again is totally impossible.

The specification therefore completely fails to give the adequate teachings of deducing these equations. **These questions therefore are completely wrong.**

8. **Claims 38-47 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 38 and 43 have been amended to add equations relating dimensions of the apertures, the horizontal distance between the apertures, vertical gap between rows of the apertures, the thickness of the substrate, vertical and horizontal viewing angle, depth of field, luminosity and image definition. However these equations are physically impossible for the reasons shown above (i.e. the dimensional analysis). These equations therefore are not enabling by the specification.

Claims 38 and 43 recite method for providing auto-stereo three-dimensional views however the specification fails to teach how could auto-stereo three-dimensional views are enable by simply having computer-processed image and a barrier screen. The critical criterion for having left eye perspective image and right eye perspective image being directed to the left eye and right eye of an observer is necessary for enabling the auto-stereoscopic view.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. **Claims 38 and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 38 and 43 have been amended to add equations relating dimensions of the apertures, the horizontal distance between the apertures, vertical gap between rows of the apertures, the thickness of the substrate, vertical and horizontal viewing angle, depth of field, luminosity and image definition. However these equations are physically impossible for the reasons shown above (i.e. the dimensional analysis) this therefore makes the scopes of claims unclear.

Drawings

11. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "depth field (D)" recited in claims 38 and 43 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 38-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Moseley et al (PN. 5,953,148) in vie of the patent issued to Nomura et al (PN. 5,949,390).

Moseley et al teaches an *apparatus* and *method* for providing *auto-stereo three-dimensional view* wherein the apparatus comprises a *backlight illuminating source* (29, Figures 15b), a *transmissive liquid crystal display device* (please see Figure 15b) that implicitly includes a *transparent substrate* for providing *image*, a *parallax barrier* that serves as *parallax barrier screen* in front of the images to provide parallax effect wherein the barrier screen comprises of a *plurality of apertures*, (please see Figure 15b). Moseley teaches that the image pixels on the spatial light modulator or the liquid crystal display can be arranged in *staggering shapes* with *black mask* interposed between the staggered shaped pixels to maximize the display resolution by reducing the cross-talk i.e. to reduce light from neighboring regions to leak through the viewing window, (please see Figures 18, column 11, line 63 to column 12, lines 19). The black mask provides the *dark rippled lines* that alternates between the top and bottom portion of the lower and upper rows among the pixels.

This reference has met all the limitations of the claims with the exception it does not teach **explicitly** that the apertures or the sits on the parallax barrier are comprised of a plurality rows of staggered apertures. **Nomura** et al in the same field of endeavor teaches to use a *parallax barrier with a plurality rows of staggered apertures* or *slits* (please see Figure 2) to be **aligned** with **staggered image cells** for the benefit of reducing the possible intensity variation caused by the *black lines* separating the image cells. As shown in Figures 2, 3A and 4, it is implicitly true that the black lines separated the staggered image pixels are aligned with the top and bottom of the apertures. It would then have been obvious to apply the teachings **Nomura** et al to modify the parallax barrier screen of **Moseley** et al accordingly for the benefit of reducing cross talk and reducing deterioration of resolution therefore ensured good image intensity of the auto-stereoscopic image viewed. These modifications would have improved the image quality greatly. Nomura et al teaches explicitly that the parallax barrier screen has apertures defining **windows** onto one of the plurality of image cells, (please see Figures 2, 3A and 4). Nomura et al further teaches an image processing section (11, Figure 1) for processing the image for display which may include computer as common means for image processing.

Claims 38 and 43 have been amended to provide equations for relating the dimensions of the apertures, the horizontal distance between the apertures, vertical gap between rows of the apertures, the thickness of the substrate, vertical and horizontal viewing angle, depth of field, luminosity and image definition. However as explicitly stated in the paragraphs above, these equations are physically impossible and are wrong. They are therefore rejected under 35 USC 112, first and second paragraphs. These features therefore can only be examined in the broadest interpretations.

Both the cited Moseley et al (Figure 15b) and Nomura et al (Figure 4) give explicit demonstrations between the geometrical relationship between the image medium and the barrier screen. This implicitly suggests that in order for the auto-stereo three dimensional view to be established, the size of the apertures (i.e. the length and width), the horizontal separation and vertical separation of the apertures in the barrier, the thickness of substrate for the image medium, the luminosity, the horizontal and vertical viewing angles, the depth of field and the image definition are related, (i.e. geometrically related).

Since by definition, the luminosity of the image light is determined by the aperture size, the width and length of the aperture therefore must be a factor for designing the luminosity.

By simple geometry, the horizontal viewing angle and the vertical viewing angle are determined by the aperture size. The vertical gap or separation of the apertures in the vertical direction certainly determines the vertical viewing angle and the horizontal distance between the apertures certainly determines the horizontal viewing angle. The image definition is also determined by horizontal separation distance between the apertures in order for the image to be viewed by the two eyes of the observer with cross-over noise. The relationships among the various factors recited in claims 38 and 43 therefore implicitly related to each other and defined by the geometrical arrangement of the barrier screen (the apertures) and the image medium (image pixels).

With regard to claims 39-42 and 44-47, Moseley et al teaches that parallax barrier screen can have film with opaque layer with apertures defined therein, (please see Figure 15b). However this reference does not teach that the parallax barrier has two layers and each layer with apertures. **Nomura** et al in the same field of endeavor teaches that the parallax barrier can be provided by using two slit panels (14 and 14') that are either formed on *two* separated layers, (i.e. each with metal strips formed on a transparent plate, please see column 9, lines 1-3), or two sets of metal strips printed on two surfaces of a glass plate. Nomura et al teaches that arrangement has the advantage of providing a better reduction of the cross talk between the image cells, (please see Figure 17 and column 12 line 54 to column 13, line 13). The metal strips are opaque and could be reflective. It also known in the art to coat the back surface of the parallax barrier screen with highly reflective layer for the purpose of reflecting the light blocked by the barrier screen back to the illumination source in order to utilize the illumination source with more efficiency. It would then have been obvious to modify the barrier screen of Moseley et al with the teachings of Nomura et al for the benefit of providing better reduction of the cross talk between image cells and therefore provides better image quality.

14. Claims 38-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Nomura et al (PN. 5,949,390) in view of the patent issued to Moseley et al (PN. 5,953,148).

Nomura et al teaches an *apparatus* and *method* for providing *three-dimensional image display* that is comprised of *an image processing section* (11, Figure 1) for providing processed left eye and right eye perspective images for displaying on *an image display medium* such as *liquid crystal display panel* (1). The liquid crystal display panel implicitly comprises a transparent substrate to allow light generated from backlight source to pass, (noted the light propagating direction is from behind of the liquid crystal panel, which implies that a light source is placed behind the panel, please see Figure 1). Nomura et al further teaches that the apparatus comprises a slit panel (2) serves as the barrier screen that is placed in front of the liquid crystal display panel to provide parallax effect wherein the slit panel is comprised of a plurality of rows of staggered (or zig-zag) apertures through which the image light passes to reach the eyes of the observer, (please see Figures 1 and 2). Nomura et al also teaches that the images displayed on the liquid crystal display panel are formed with a plurality of pixel groups (1a, Figure 4) that are also arranged in staggered or zig-zag format to match the arrangement of the apertures of the slit panel when the slit panel and the liquid crystal display panel are aligned so that the image light from the corresponding pixel group passes through the corresponding aperture (please see Figure 4) to provide the desired auto-stereoscopic image display. The pixel groups are separated by lines as shown in Figure 3A, 3B and 4. It is implicitly that the top and bottom of the pixel groups are aligned with top and bottom points of the apertures so that the image light from the pixel groups are not obstructed by the non-aperture portion of the slit panel.

This reference has met all the limitations of the claims. **Nomura** et al teaches that the image pixels are separated so that the separation is aligned with the top of an aperture of the silt panel in the lower row and bottom portion of the aperture in the upper row, (please see Figure 2, 3A and 4). However it does not teach explicitly that the lines are of dark rippled lines. **Moseley** et al in the same field of endeavor teaches an auto stereoscopic 3D image display wherein the pixels of image on the spatial light modulator (which includes a liquid crystal display panel) are arranged with staggered arrangement with black mask lines (5 and 35, column 2, lines 26-27) interposed between the pixels such that the black mask lines shown rippled type arrangement, (please see Figure 18). It would then have been obvious to one skilled in the art to apply the teachings of Moseley et al to modify the arrangement of the pixel groups so that they are arranged with rippled dark mask lines between them to reduce further the cross talk among the various pixel groups i.e. to reduce light from neighboring regions to leak through the viewing window to improve the image quality, (please see Figures 18, column 11, line 63 to column 12, lines 19).

Claims 38 and 43 have been amended to provide equations for relating the dimensions of the apertures, the horizontal distance between the apertures, vertical gap between rows of the apertures, the thickness of the substrate, vertical and horizontal viewing angle, depth of field, luminosity and image definition. However as explicitly stated in the paragraphs above, these equations are physically impossible and are wrong. They are therefore rejected under 35 USC 112, first and second paragraphs. These features therefore can only be examined in the broadest interpretations.

Both cited Nomura et al (Figure 4) and Moseley et al (Figure 15b) give explicit demonstrations between the geometrical relationship between the image medium and the barrier screen. This implicitly suggests that in order for the auto-stereo three dimensional view to be established, the size of the apertures (i.e. the length and width), the horizontal separation and vertical separation of the apertures in the barrier, the thickness of substrate for the image medium, the luminosity, the horizontal and vertical viewing angles, the depth of field and the image definition are related, (i.e. geometrically related).

Since by definition, the luminosity of the image light is determined by the aperture size, the width and length of the aperture therefore must be a factor for designing the luminosity.

By simple geometry, the horizontal viewing angle and the vertical viewing angle are determined by the aperture size. The vertical gap or separation of the apertures in the vertical direction certainly determines the vertical viewing angle and the horizontal distance between the apertures certainly determines the horizontal viewing angle. The image definition is also determined by horizontal separation distance between the apertures in order for the image to be viewed by the two eyes of the observer with cross-over noise. The relationships among the various factors recited in claims 38 and 43 therefore implicitly related to each other and defined by the geometrical arrangement of the barrier screen (the apertures) and the image medium (image pixels).

With regard to claims 39-42 and 44-47, Nomura et al in the same field of endeavor teaches that the parallax barrier can be provided by using two slit panels (14 and 14') that are either formed on *two* separated layers, (i.e. each with metal strips formed on a transparent plate, please see column 9, lines 1-3), or *two sets of metal strips printed on two surfaces of a glass plate*. Nomura et al teaches that arrangement has the advantage of providing a better reduction of the cross talk between the image cells, (please see Figure 17 and column 12 line 54 to column 13, line 13). The metal strips are opaque and could be reflective. It also known in the art to coat the back surface of the parallax barrier screen with highly reflective layer for the purpose of reflecting the light blocked by the barrier screen back to the illumination source in order to utilize the illumination source with more efficiency. It would then have been obvious to modify the barrier screen of Moseley et al with the teachings of Nomura et al for the benefit of providing better reduction of the cross talk between image cells and therefore provides better image quality.

Response to Arguments

15. Applicant's arguments filed on March 27, 2007 have been fully considered but they are not persuasive. The amendment to the claims have been fully considered and they are rejected for the reasons stated above. Applicant's arguments are mainly drawn to the newly amended features of the claims and they are fully addressed in the paragraphs above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.